

Generating Formulae Practice

(a) An equilateral triangle has sides of length x cm. Write a formula for the perimeter P of the triangle.

$$(a) \quad P = x + x + x \\ P = 3x$$

(b) A helicopter consumes n litres of fuel per minute. Write a formula for the total number of litres T consumed during a flight lasting 30 minutes.

$$(b) \quad T = n \times 30 \\ T = 30n$$

(c) Each month I pay $\pounds a$ for my house insurance and $\pounds b$ for my car insurance. Find a formula for the total amount T I spend on house and car insurance per year.

$$(c) \quad T = 12 \times a + 12 \times b \\ T = 12a + 12b$$

(d) Jo receives $\pounds 500$ for her birthday, which she saves in a bank. She adds $\pounds 10$ per month to her savings. Find a formula for the amount $\pounds P$ she will have after m months of saving.

$$(d) \quad P = 500 + 10 \times m \\ P = 500 + 10m$$

(e) A rectangle has length $2x$ cm and width $(x + 3)$ cm. Find formulae for the area A and the perimeter P of the rectangle.

$$(e) \quad A = 2x(x + 3) \\ A = 2x^2 + 6x \\ P = 2x + 2x + x + 3 + x + 3 \\ P = 6x + 6$$

(f) Pencils cost 15p each and pens cost 25p each. Write a formula for the cost C of x pencils and y pens.

$$(f) \quad C = 15 \times x + 25 \times y \\ C = 15x + 25y$$

(g) My brother is 6 years older than me, and my sister is 3 years younger than me. I am x years old. Write a formula for the mean age M of me, my brother and my sister.

$$(g) \quad M = \frac{x + (x + 6) + (x - 3)}{3} \\ M = \frac{3x + 3}{3} \quad M = x + 1$$

(h) A rectangle of dimensions a cm by b cm has a 1 cm square cut from each of its four corners. The sides formed are then folded up to make a rectangular tray. Find a formula for the volume V of the tray.

$$(h) \quad L = a - 2 \\ W = b - 2 \\ h = 1 \\ V = L \times W \times h \\ V = (a - 2)(b - 2)$$